

High Sensitivity Pulsed Laser Vibrometer for Aircraft Interior Noise Monitoring, Phase I

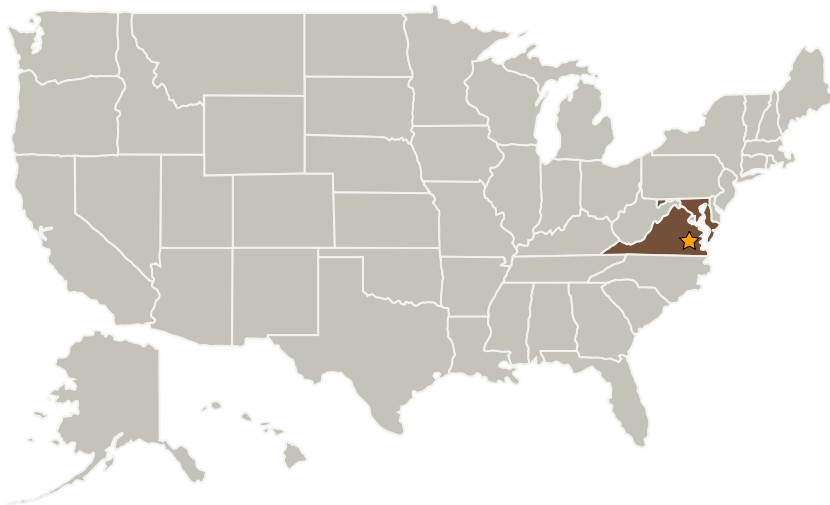
Completed Technology Project (2006 - 2006)



Project Introduction

We propose an innovative pulsed laser vibrometer technology for the monitoring of interior noise inside an aircraft. The optical speckle-tolerant nature of the pulsed laser vibrometer, coupled with its high sensitivity and bandwidth in surface vibration monitoring, makes the proposed technology ideal for the monitoring of aircraft interior vibrations from surfaces with widely varying colors and degrees of optical speckle inducing power. The highly sensitive pulsed laser vibrometer allows handheld, portable operation, even in places difficult to access, thanks to its remote and non-contact nature for surface vibration monitoring. Other advantages enabled by the proposed technology include the compactness and low optical power requirement, which make it ideal for deployment in situations where the availability of space and power can be significantly restricted, for example, spaceborne applications. The feasibility of using the proposed photo-EMF pulsed laser vibrometer to monitoring surface vibrations of samples with widely varying surface characteristics will be demonstrated during the Phase I program. A working prototype pulsed laser vibrometer system for aircraft interior noise monitoring will be developed during the Phase II research program.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Brimrose Corporation of America	Supporting Organization	Industry	Sparks, Maryland

Primary U.S. Work Locations

Maryland	Virginia
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers